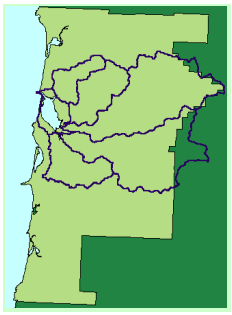
Tillamook County, Oregon
National Spatial Data Infrastructure
Community Demonstration Project

WHERE IS TILLAMOOK COUNTY AND WHY IS IT AN NSDI SITE?



Tillamook County Oregon is on the north coast of Oregon, with the coastline about 70 miles west of the City of Portland. Tillamook County has approximately 25,000 citizens, however, the prime tourist destination, the Tillamook County Creamery, draws over a million visitors each year. Aside from tourism, the lead industries are timber, agriculture (primarily dairy) and commercial and sport fisheries. The extensive forests of the Tillamook Bay Watershed, lowlands, and the Bay itself have always shaped the human uses of the region and its economic growth. Based on geographic imaging, 89% of the Watershed's 358,450 acres is considered forest land, 6.5% is used for agriculture, 1.5% is taken up by urban or rural development, and 3% is covered by water (Oregon Department of Environmental Quality, 1992). This naturally diverse landscape has proven ideal for dairy farming, forestry, and commercial fishing.

Tillamook County contains seven estuaries, which support diverse living resources such as shellfish, salmon, trout, bottomfish and numerous wildlife species all valued for their economic, recreational, aesthetic, and ecological importance. Most of these estuaries are environmentally challenged due to impacts from development, tourism, natural resource industries and heavy industries. A number of fish and wildlife species are listed as endangered or threatened. Declining numbers of salmon have become a primary focus of state, regional, and federal governments.

WHO ARE THE PARTNERS IN THE TILLAMOOK COUNTY PROJECT?

Tillamook Bay National Estuary Project

Partners that assisted Tillamook County in this project include: U.S. Departments of the Interior, Agriculture, and Commerce; Environmental Protection Agency; Oregon Departments of Forestry, Fish & Wildlife, Emergency Management, Division of Land Conservation and Development, Water Resources, Environmental Quality, and Revenue; Environmental Systems Research Institute; Oregon State University; University of Oregon; Polk County; Tillamook County Departments of Public Works, Health, Information Services, Personnel, Treasurer, Emergency Management, Community Development and Economic Development, and Performance Partnership; the Tillamook Bay Community College; Tillamook Coastal Watershed Resource Center; the watershed councils of Lower Nehalem, Tillamook, Netarts, and Nestucca/Neskowin; Tillamook People's Utility District; Tillamook County Soil & Water Conservation District; Sean Allen (contractor); and, Dean Anderson Associates (GIS consultants).

HOW WE APPROACHED THE PROJECT

The project was locally titled the "Tillamook Coastal Watershed Information Project" and the theme was to foster and sustain the environmental and economic well being of the community by linking people with GIS information and GIS technology.

Representatives from the Tillamook Bay National Estuary Project, the Board of Commissioners, the Community Development and Emergency Management Departments, citizen watershed council members, and the National Partnership for Reinventing Government conferred by phone and in person to develop a strategic approach to the project. The group decided to consider the combined needs of county's citizens and the coastal environment, to demonstrate how a GIS tools are able to assist decision makers in developing and implementing hazard reduction and conservation plans in overlapping geographic areas. The project was designed to demonstrate the integration of GIS data with other data and information, which combined impacted community decision-making and educational programs. The project focused on providing additional geographic information to help resolve two key questions in local watershed planning, namely, "Where In The Floodplain Should Flood Mitigation Activities Occur," and, "Where In The Lower Watershed Should Salmon Habitat Restoration Activities Occur?"

WHAT ARE THE RESULTS OF THE TILLAMOOK COUNTY PROJECT?

We created a common database of core “Framework” data with documentation and a data library. We also provide information over the Internet with user-interactive mapping capability and provide decision support for community planning and decision making by watershed councils. GIS education is provided to decision-makers through classes offered at the Tillamook Coastal Watershed Resource Center and the Tillamook Bay Community College using ArcView for effective use of decision support tools. Recent draft revisions to the FEMA Flood Insurance Rate Maps were tied with other GIS data so that landowners and authorities can better understand the realities and implications of the new flood plain mapping. By using these very effective mapping and communication tools, public employees have saved countless hours in providing good information to the public they serve. Results of the project are on-line at http://gisweb.co.tillamook.or.us.

With the aid of a locally-improved GIS tool, Tillamook County was able to dramatically reduce flood damages to homes and businesses in the Lower Wilson River flood plain in 1999. These results were made possible by a combined effort of programs including CWIP, Project Impact, and the US Corps of Engineers’ "Emergency Advance Measures.” Without local GIS mapping capabilities, it is doubtful that the Corps’ emergency measures would have been approved for implementation until the following year. The ability to produce maps quickly to answer concerns raised by various agencies was key in getting these measures implemented just prior to the Wilson River flood.

Working with lead natural resource agencies such as the Oregon Department of Fish and Wildlife, we prioritized project sites in the lower basin of the Wilson, Trask and Kilchis river systems. After site selection, projects will be designed and implemented. The prioritization process relies heavily on data in GIS such as tidegate location and condition and aquatic inventories of fish habitat conditions.

A computer model is being developed to analyze the complex flood processes in the Tillamook Bay rivers. In the intervening 20 years since the Tillamook Bay floodplains were first delineated in a Flood Insurance Study, there has been explosive growth in computer technology and sophistication of computer models to represent complex flood processes. A key consideration for flood modeling of Tillamook Bay rivers involves accounting for the unsteady flow characteristics of tidal and storm surge influences on flooding and the effects of floodplain storage on peak flows. These flood characteristics and their effects can only be adequately analyzed using a GIS-based hydrodynamic computer model such as the Danish Hydraulic Institute’s “Mike 11.”

WHAT ARE TILLAMOOK COUNTY'S FUTURE PLANS FOR THE PROJECT?

Tillamook's vision is to develop an "Enterprise" GIS, a vision encompassing several concepts including development of data to support applications, technology to support delivery of services, spatial enablement of existing applications, data sharing to reduce redundancy, business processes as the basis for applications, common base maps (framework data), and applications that drive technology and data development.